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Electrophysiology

IVABRADINE EFFECTS ON COVID-19 INDUCED POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME

Moderated Poster Contributions
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Background: This prospective observational study aimed to evaluate the role of ivabradine in the management of post-COVID-19 postural orthostatic tachycardia syndrome (POTS) in young patients.

Methods: A total number of 55 patients were diagnosed as Post COVID-19 POTS after exclusion of anemia, thyroid dysfunction, and pheochromocytoma were included. A 24-hour Holter electrocardiogram (ECG) was used to exclude accessory pathways. Ivabradine 5 mg twice daily was initiated and follow-up Holter ECG was done after 7 days with re-assessment of patients' symptoms, heart rate, and heart rate variability (HRV) parameters changes.

Results: 78% of the patients reported significant improvement of the symptoms within 7 days of ivabradine therapy. Comparing 24-hour heart rate, and HRV time and frequency domains before and after ivabradine therapy, 24-hour heart rate (minimum, average, and maximum) was significantly lower (p-value<0.0001*, =0.001*, <0.0001* consecutively). There was a significant difference in HRV time-domain parameters (SDNN, rMSSD) (p-value<0.0001*) while there was no difference in HRV frequency-domain parameters (LF, HF) (p-value=0.51, 0.44 consecutively)

Conclusion: In a prospective study that evaluated the effects of ivabradine in post-COVID-19 POTS, patients treated with ivabradine reported improvement of their symptoms within 7 days of ivabradine treatment with significant reduction of 24-hour average, minimum, and maximum heart rate, and improvement of HRV time domains.

Table 1: Baseline demographic and clinical data (N=55)

Age (Years)	30.5±6.9
Males	32 (58.2)
Smoking	22 (40)
Alcohol	4 (7.3)
Left Ventricular Ejection Fraction (%)	66.3±6.8
Number of days post COVID-19 (days)	13.5±5.6
Resting ECG HR (bpm)	84.4±13.8
Number of patients reported clinical improvement with ivabradine	43 (78%)

Results are represented as numbers (%) or mean ± standard deviation, BPM: Beats per minute, HR: Heart rate

Table 2: Heart rate and heart rate variability parameters

	Before Ivabradine	After Ivabradine	P-value
HR data			
Average HR (24H) (bpm)	82.2±11.2	75.1 ±11	**0.001***
Min. HR (24H) (bpm)	63.5±5.8	58.4±5.1	**<0.0001***
Max. HR (24H) (bpm)	146.9 ±15.3	118.7±18.1	**<0.0001***
HRV data			
SDNN (ms)	123 ±21.6	177.6±45.1	**<0.0001***
rMSSD (ms)	100.4±19.4	157.2±34.6	**<0.0001***
LF (ms^2)	633.1±197.7	656.8±181.1	**0.51**
HF (ms^2)	1848±229.1	1881.4±225.1	**0.44**

Results are represented as numbers (%) or mean ± standard deviation, BPM: Beats per minute, HR: Heart rate, HRV: Heart rate variability, LF: Low frequency, HF: High frequency